

Teaching Statement

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Teaching Philosophy

My experience of teaching I have gained and enjoyed so far plays an important role in motivating me to pursue academia. I learned a great deal about the art of teaching from my advisor, who is popular among students for his teaching style, by attending his lectures and being his teaching assistant (TA). These skills have been kept practiced and improved in various forms of my duties as TAs for different courses.

Teaching is an interactive process, involving both the clear elaboration from the teacher with passion and the active participation of the students with curiosity. As such, the key to a successful teaching, for me, hinges upon the sufficient preparation for organized course content, inspiring questions and interesting stories, to keep students engaged. The good example is my advisor, who manages to explain complex concepts in a simple way and draw interest from students with funny stories. In his lectures of the undergraduate operating system course, students are very active in asking and answering questions. This is really impressive for a tough course like *Operating Systems*, where students easily get lost and doze off according to previous experience. In his lectures, interesting examples are given for warming up, then smoothly transitioned to core concepts that are explained clearly. Questions are asked in the middle to keep students thinking and make sure they follow. In this way, students can pay full attention and learn efficiently in class.

I applied what I learned about teaching in the tutorials I conducted as a TA for a programming course. When I demonstrated a recursion problem, I first told the story of “the cat in the hat” and the story of “Martin and the dragon,” where students can visualize recursion and understand its main idea. It turned out to be very effective in drawing their attention. Then I led them towards finding the solution by themselves and eventually demonstrated the program they worked out successfully. This tutorial was well received, much better than any tutorials I conducted before without attracting their participation.

Beyond interest inspiration in the lectures, it is also important to help students with their learning process and cultivate their problem-solving abilities. I believe carefully designed labs or course projects can help students apply the knowledge in practice, to better understand theories, learn modern tools and gain hands-on experience with solving real world problems, which is highly demanded in the field of computer science and engineering. I am fortunate to have participated in four courses with labs, ranging from the elementary programming course to the advanced systems software course. By attending meetings with professors, communicating with other TAs and talking with students in labs, I gained familiarity with the course design and also gave some feedback to help improve the course. When helping students with their labs, I usually encourage them to identify the problems by themselves and

discover the solutions together. When they got stuck for not fully understanding a concept or an algorithm, I would walk them through a series of straw man alternatives, analyze and address the deficiencies gradually, and arrive at a working solution eventually.

Above all, good teaching requires passion and preparation to organize the lectures, explain concepts clearly and draw attention from time to time. I believe the vivid anecdotes behind every concept, algorithm, and invention in computer science are worth being shared with students, which can invoke their interest at the beginning or get their focus back in the middle when they get tired. Good teaching does not come easy. Each minute in the lecture requires a large amount of preparation work, from the design of slides and animation to the search for compelling examples, stories, and jokes. However, all the efforts pay off with the feeling of fulfillment when the lecture is well received.

Courses I Can Teach

I am interested in teaching undergraduate courses in introductory computer science, programming fundamentals, data structure and algorithms, computer networks and operating systems. For graduate courses, I would like to teach convex optimization and advanced network architecture. Given my own expertise, I am especially interested in opening research-oriented seminar courses related to cloud computing, datacenter networking, and big data systems. Such seminars are inspiring for research projects according to my experience, and it is my wish to provide similar opportunities for more students.

Mentoring

I have been fortunate to mentor an undergraduate student on a research project I was leading. With our close communication and collaboration, we have published a conference paper and a journal article based on the project. As an advisor, it is most important to help students find their interesting topics that really excite them and are also promising so that they can have the motivation to do their best work towards fruitful directions. In the long run, I will work and communicate with them closely, to have good management of their research projects. Last but not least, I hope to foster a comfortable and friendly environment in my research group where members are working collaboratively and efficiently to explore their potentials.